

### AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

#### Listing of Claims:

1. (Currently Amended) A method for encoding and decoding first and second data streams comprising:

encoding said first data stream using a first encoder to produce a first optimal lossless encoded data stream;

encoding said second data stream using a second encoder to produce a second optimal lossless encoded data stream, wherein encoding of said second stream satisfies a prefix condition and said prefix condition is satisfied for a code  $\gamma_Y$  for data source  $Y$  given data source  $X$  when for each element  $x \in X$ , and for each element  $y, y' \in A_x$ , the description of  $y$  is not a prefix of the description of  $y'$  and where  $A_x$  is a set and where  $y' \neq y$ ;

providing said first and second encoded data streams to a receiver wherein said receiver is provided one of said first and second data streams as side-information;

decoding said first and second encoded data streams using a single optimal lossless decoder.

2. (Canceled)
3. (Canceled)
4. (Canceled)
5. (Canceled)
6. (Currently Amended) The method of claim 5 1 wherein said code 7, is a matched code.

7. (Original) The method of claim 6 wherein said code  $\gamma_r$ , is an instantaneous, side-information matched code for  $p(x, y)$  when  $\gamma_r$  is a matched code for some partition  $\mathcal{P}(\mathcal{Y})$  for  $p(x, y)$ .

8. (Withdrawn) A method of generating code comprising:  
obtaining an alphabet of symbols generated by a data source;  
identifying combinable symbols of said alphabet and generating subsets of combinable symbols;  
identifying optimal partitions of said subsets of symbols to generate a list of groups;  
using said list of groups to generate partitions of the full alphabet.

9. (Withdrawn) The method of claim 8 further comprising determining a matched code for each partition.

10. (Withdrawn) The method of claim 8 further comprising selecting a partition whose matched code has a best rate.

11. (Withdrawn) The method of claim 8 wherein said matched code comprises a Huffman code.

12. (Withdrawn) The method of claim 8 wherein said matched code comprises an arithmetic code.

13. (Withdrawn) The method of claim 8 wherein symbols  $y_1, y_2 \in \mathcal{Y}$  can be combined under  $p(x, y)$  if  $p(x, y_1)p(x, y_2) = 0$  for each  $x \in \mathcal{X}$ .

14. (Withdrawn) The method of claim 13 wherein for each symbol a set  $\mathcal{C}_y$  is generated.

15. (Withdrawn) The method of claim 13 further including the step of identifying all non-empty subsets for each set  $\mathcal{C}_y$ .

16. (Withdrawn) The method of claim 8 wherein a partition is complete and nonoverlapping if  $\mathcal{P}(\mathcal{Y}) = \{\mathcal{G}_1, \mathcal{G}_2, \dots, \mathcal{G}_m\}$  satisfies  $\bigcup_{i=1}^m \mathcal{G}_i = \mathcal{Y}$  and  $\mathcal{G}_j \cap \mathcal{G}_k = \emptyset$  for any  $j \neq k$ , where

each  $\mathcal{G}_i \in \mathcal{P}(\mathcal{Y})$  is a group for  $p(x, y)$ , and  $\mathcal{G}_j \cup \mathcal{G}_k$  and  $\mathcal{G}_j \cap \mathcal{G}_k$  refer to the union and intersection respectively of the members of  $\mathcal{G}_j$  and  $\mathcal{G}_k$ .

17. (Withdrawn) The method of claim 8 wherein said coding scheme is a lossless coding scheme.

18. (Withdrawn) The method of claim 8 wherein said coding scheme is a near-lossless coding scheme.

19. (Withdrawn) The method of claim 8 wherein said coding scheme is a side-information, lossless coding scheme.

20. (Withdrawn) The method of claim 8 wherein said coding scheme is a side-information, near-lossless coding scheme.

21. (Withdrawn) A method of code for  $X$  and  $Y$  comprising:

generating a partition pair  $\mathcal{P}(X)$  and  $\mathcal{P}(Y)$  such that each partition is a legitimate partition for a side-information, lossless decoding scheme;

identifying said partition pair as a legitimate partition for general lossless decoding if the two descriptions together give enough information to decode  $X$  and  $Y$  uniquely.

22. (Withdrawn) The method of claim 21 wherein said partition pair is a legitimate partition pair when for any  $x, x' \in \mathcal{X}$  such that  $\{\gamma_X(x), \gamma_X(x')\}$  does not satisfy the prefix condition,  $\{\gamma_Y(y) : y \in \mathcal{A}_x \cup \mathcal{A}_{x'}\}$  satisfies the prefix condition.

23. (Withdrawn) The method of claim 21 wherein said partition pair is a legitimate partition pair

when for any  $y, y' \in \mathcal{Y}$  such that  $\{\gamma_Y(y), \gamma_Y(y')\}$  does not satisfy the prefix condition,  $\{\gamma_X(x) : x \in \mathcal{B}_y \cup \mathcal{B}_{y'}\}$  satisfies the prefix condition.

24. (Withdrawn) A method for generating a MASC code comprising:

generating instantaneous code by:

generating subtrees  $\mathcal{T}_X$  and  $\mathcal{T}_Y$  descending from nodes  $n_X$  and  $n_Y$  (including  $n_X$  and  $n_Y$  respectively).

25. (Withdrawn) The method of claim 24 further comprising satisfying one of the following conditions;

(A)  $X \in \mathcal{T}_x$  or  $n_y$  is a leaf implies that  $Y \in n_y$ , and  $Y \in \mathcal{T}_y$  or  $n_x$  is a leaf implies that  $X \in n_x$ ;

(B)  $X \in \mathcal{T}_x$  implies that  $Y \notin n_y$ ;

(C)  $Y \in \mathcal{T}_y$  implies that  $X \notin n_x$ .

26. (Withdrawn) The method of claim 25 wherein said instantaneous code is lossless when: generating code such that for any  $(x, y) \in \mathcal{X} \times \mathcal{Y}$  with  $p(x, y) > 0$ , final nodes  $(n_x, n_y)$  are generated that satisfy;

(D)  $(x, y) \in n_x \times n_y$  and for any other  $x' \in n_x$  and  $y' \in n_y$ ,  
 $p(x, y') = p(x', y) = p(x', y') = 0$ .

27. (Withdrawn) A method of generating code comprising:

obtaining an alphabet of symbols generated by a data source

determining which of said symbols can have identical code descriptions and which symbols cannot have identical code descriptions;

28. (Withdrawn) The method of claim 27 further including determining which of said symbols can have code descriptions for which one symbols' code description is a prefix of another symbol's code description.

29. (Withdrawn) A method of generating code for data sources X and Y having data rates  $R_x$  and  $R_y$  respectively, comprising:

generating a code that minimizes  $\lambda R_x + (1 - \lambda) R_y$  for an arbitrary value of  $\lambda$ .

30. (Withdrawn) The method of claim 29 wherein  $\lambda \in [0, 1]$ .

31. (Canceled)

32. (Canceled)

33. (Canceled)

34. (Canceled)
35. (Withdrawn) A method of designing codes comprising:  
obtaining an alphabet of symbols generated by a data source;  
ordering said alphabet of symbols;  
identifying restrictions of a class of codes based on said ordering of said alphabet;  
designing code for said restricted class for said ordering of said alphabet.
36. (Withdrawn) The method of claim 35 wherein said restrictions include a requirement that symbols be adjacent symbols.
37. (Withdrawn) The method of claim 35 further including the step of selecting an ordering of said alphabet based on generating code for a plurality of orderings.
38. (Withdrawn) The method of claim 37 wherein an ordering is selected based on a best rate resulting from one of said orderings.